Review of British Columbia's Groundwater Regulatory Regime: Current Practices and Options

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Scope of this Report

This assessment was prepared as part of Watershed Watch's larger project on groundwater and wild Pacific salmon supported by the Walter and Duncan Gordon Foundation (www.watershed-watch.org and www.gordonfn.org). The purposes of this assessment are to:

- describe the current state of groundwater regulation in British Columbia;
- examine the implications of current groundwater regulation for fish;
- explore the regulation of surface water licensing and assess the implications of extending the current regulatory system to groundwater regulation; and
- with reference to other Canadian and international jurisdictions, to describe regulatory options available to the Government of British Columbia to protect groundwater.

Summary

British Columbia has one of the least developed groundwater regulation regimes in North America. Only a few short years ago groundwater use in British Columbia was virtually unregulated.

In 2004, the government enacted the *Groundwater Protection Regulation* (the GPR). The GPR sets qualifications for those working on wells or pumps, established a registry of qualified well drillers and pump installers and specifics some basic practices and safeguards that must be followed during the well installation and deactivation process. The GPR also requires the registration of wells that will be used for water supply and limited reporting for other types of wells. While these requirements are positive steps, most aspects of groundwater protection remain unregulated.

The absence of a comprehensive regulatory approach has significant consequences for fish. The interconnection between groundwater and surface water bodies supporting fish habitat has long be recognized by hydrologists and addressing the interconnection is increasingly a standard regulatory feature in many jurisdictions[1]. In British Columbia however, proposed groundwater exploration and extraction is largely unassessed and unregulated. In other words, provincial officials have no way of even assessing the full extent of groundwater usage, let alone regulating groundwater use to mitigate environmental impacts. Our examination of other legislation governing water use and fish does not reveal any alternate means of addressing the impacts of groundwater usage.

The extraction and use of surface water is regulated in British Columbia. The British Columbia regime is based upon a "prior allocation" model which grants priority to water use based on the

[1] Douglas, T. 2006. *Review of Groundwater-Salmon Interactions in British Columbia*. Watershed Watch Salmon Society. 2006.

date of first use. Currently, surface water regulation does not protect fish or the environment sufficiently or consistently. The regime also fails to encourage the sustainable and efficient use of water. Thus, the extension of the current licensing system to groundwater – without modification – is not desirable.

The assessment concludes by identifying a number of regulatory options available to the government of British Columbia. Identified options could assist in attaining the objectives of: minimizing conflict arising from groundwater use (with other users or the environment); protecting the quality of groundwater; and encouraging the sustainable and efficient use of groundwater.

Sections in this Analysis:

I. Current Regulation of Groundwater in British Columbia

With the exception of requirements specifying training and qualifications for those who drill wells and reporting of some new well construction (discussed below), siting, capacity and quantity withdrawals of groundwater are unregulated. As discussed below, groundwater use may be evaluated under the British Columbia *Environmental Assessment Act* and the *Utilities Act.*

The limited regulation of well drillers was only brought into force in 2004. The provisions are contained in the *Groundwater Protection Regulation* promulgated under the *Water Act*, and sets qualifications for those working on wells or pumps, established a registry of qualified well drillers and pump installers and specifies some basic practices and safeguards that must be followed during the installation and deactivation process.[2]

The regulation also imposes reporting requirements for the construction of certain categories of wells. The GPR requires well construction reports for water supply wells (both domestic and non-domestic) as well as one class of injection well (permanent, vertical wells) and one class of dewatering wells (permanent, vertical wells).[3]

[2] British Columbia Reg. 299/2004, Part 1, App. A
[3] British Columbia Reg. 299/2004, Schedule 2.

These developments, while positive, still leave British Columbia with an underdeveloped regulatory scheme. The failure to exercise government oversight results in missed opportunities to address important concerns, such as:

- assessing the potential effect of groundwater usage on existing users, the environment and the long terms sustainability of the aquifer;

- examining hydrologic connections between groundwater sources and threaten aquatic ecosystems;

- managing rates of aquifer depletion (or "mining");

- ensuring the prevention of salt water intrusion in coastal areas;

- review of the location of groundwater extraction to manage quality and quantity concerns;

- metering and reporting of groundwater use;

- review of the purpose and efficiency of proposed groundwater uses;

- ensuring protection of aquatic ecosystems; and

- creating an administrative process for the purpose of preventing or resolving conflicts between users.

Proposed groundwater extraction in British Columbia may be subject to environmental assessment under the British Columbia *Environmental Assessment Act* where it is part of a larger project that triggers an assessment, or where it is a groundwater extraction project with an extraction capacity greater than 75 litres per second. Within that context, the British Columbia Ministry of Environment has identified the following impacts of groundwater extraction:

1. Reductions in streamflow and surface water availability including effects on low flow regimes, lakes and springs, fully recorded streams and fisheries habitat in particular spawning beds.

2. Interception of ground water flow critical for maintenance of forest and grasslands habitat, wetlands and fisheries habitat in particular spawning beds.

3. Interference with licensed water users.

4. Interference with existing wells. For example, reduced capacity of domestic wells.

5. Sea water intrusion in coastal areas resulting in water quality degradation impacts on other users including shellfish beds and fish habitat.

6. Non-sustainable extraction or aquifer mining where extraction exceeds replenishment reducing water availability for all users of the aquifer.
7. Land stability and subsidence, including but not limited to development of sinkholes.
8. Property damage, flooding or siltation caused by uncontrolled flowing artesian wells.
9. Impacts of an increase in extraction rate.
10. Impacts upon existing agriculture and silviculture activities.
11. Impacts on water availability for land in the Agricultural Land Reserve that currently is not irrigated or does not have a water supply.[4]

Although the government of British Columbia recognizes these potential impacts in an environmental assessment context, most groundwater usage occurs without any consideration or mitigation of these impacts. British Columbia is the only jurisdiction in Canada that does not have a groundwater licensing requirement for groundwater use above a defined threshold level.[5]

The identified impacts are only considered for the small number of projects that trigger review by the Environmental Assessment Office (50 for the year 2005, and not all of those projects involved the use of groundwater).[6] In comparison, it is estimated that British Columbia has over 100,000 wells, but the precise number is not known due to a lack of reporting requirements.[7] While the framework set out under the ambit of the *Environmental Assessment Act* has many positive aspects (see Appendix 1), it is not adequate to protect groundwater in British Columbia. As noted, the review only applies in a small number of cases. Moreover, even if a review is conducted, there are no minimum standards that must be met or maintained when groundwater use is allowed.

Additionally, certain classes of water providers are required to obtain a Certificate of Public Convenience and Necessity, which is granted by the Comptroller of Water Rights (under authority from the *Water Utility Act* and the *Utilities Commission Act*). As part of the application process, the siting, capacity and water quality of proposed groundwater extraction may be examined. The purpose of this inquiry is to ensure the reliable delivery of safe drinking water, not to evaluate the environmental effects of the proposal.

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[4] Framework for a Hydrogeologic Study in support of an Application for an Environmental Assessment Certificate under the *Environmental Assessment Act* and Regulations

[5] Nowlan, L., *Buried Treasure* (Walter and Duncan Gordon Foundation, Toronto, Canada) 2005, p. 39.

[6] Ground water extraction may be a project in of itself (for example for municipal water supplies) or a component of other major projects such as pulp and paper mills, mining projects, fish hatcheries, resorts. Where ground water extraction is being proposed from one or more wells at a combined rate of 75 litres or more per second, Government guidelines suggests that the Environmental Assessment Office should be contacted with regard to the reviewability of the project under the *Environmental Assessment Act*.

[7] *Buried Treasure*, p. 36.

II. Implications of Current Groundwater Regulation for Fish

British Columbia's *Groundwater Protection Regulation* contains requirements aimed at well-driller qualifications and well construction and closure, which generate benefits primarily for drinking water safety. While these provisions may protect water quality in a general way, they do nothing to address quantity impacts of groundwater use.

The identification of newly drilled wells does provide some information regarding the extent of groundwater use and development in British Columbia, but the Ministry does not require the reporting of the capacity of the drilled well, nor further reporting of actual usage.

In other words, serious impacts on productivity of fish bearing streams may occur without any evaluation or oversight in most cases. Thus fisheries concerns are effectively ignored under the current governance approach.

Other provincial and federal legislation does not remediate the failings of current groundwater regulation. As noted below, the provincial *Fish Protection Act* allows for consideration of fish and fish habitat concerns in water licencing decisions as well as allowing measures requiring the reductions in water used pursuant to surface water licences (where a "water management plan" is created under the *Water Act*). No water management plans have yet been completed in BC under this new part of the Water Act: one is currently under preparation in the Township of Langley.

The FPA provides that:

> **Fish and fish habitat considerations in licensing decisions**
>
> **5** (1) Subject to the regulations, in making a decision on an application for a licence, an approval or an amendment to a licence or an approval, the comptroller or regional water manager may:
>
> (a) consider impact on fish and fish habitat, and
>
> (b) include conditions respecting fish and fish habitat in the licence, approval or amendment.
>
> (2) Without limiting subsection (1), for the purposes of
>
> (a) monitoring the impact of water use or diversion by the licensee on fish and fish habitat, or
>
> (b) verifying the information in relation to fish and fish habitat used in determining whether to issue the licence, approval or amendment,
>
> a licence, approval or amendment may include conditions that the holder of the licence or approval construct, install, operate, maintain and provide data from a streamflow

measuring device in accordance with the directions of the comptroller or regional water manager.

These protections may not be invoked to protect fish or the environment from the impacts of groundwater extraction because licenses are only required for surface water extraction.

The federal *Fisheries Act* could be invoked against groundwater usage that harmfully alters, disrupts or destroys fish habitat. In practice however, the challenges in linking damage to fish habitat to groundwater extraction has meant the habitat protection provisions of the *Fisheries Act* are seldom invoked. In one instance, an environmental organization launched a private prosecution targeting groundwater extraction in the Oak Ridges Moraine area of Ontario.[8] The federal crown stayed this prosecution.[9]

III. Jurisdiction of the Government of British Columbia to Regulate Groundwater

The Government of British Columbia has clear jurisdiction to regulate the use of groundwater, including managing its exploitation to minimize harm to fisheries and the environment.

The jurisdiction derives from powers granted to the provinces (as opposed to the federal government) in the *Constitution Act of 1867*. These powers are in relation to:

- regulating property and civil matters (including land use);
- "local works and undertakings";
- Crown lands;
- ownership of natural resources;
- jurisdiction over municipalities;
- matters of a "merely local or private nature"; and
- natural resources, forestry and electrical energy.

British Columbia has already exercised this jurisdiction with respect to surface waters (see next section) and would not face any jurisdictional constraints that do not apply to surface water. It is important to note that other provinces have regulated groundwater.

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[8]Environmental Defence Press Release, "Major Environmental Prosecution Filed Against York Region" , July 9, 2004, found at: http://www.environmentaldefence.ca/pressroom/releases/20040709.htm .

[9]York Durham Sewage System Press Release, "Attorney General of Canada halts private prosecution against the Regional Municipality of York", November 18, 2005. Found at: http://www.york.ca/NR/rdonlyres/knybtanxgbrwxe6qz4wdq33km4qk6cijgajh7cveu4s3eqhfbo3npxp7qpv3la5o6m7npl5anw3g2lqtvxq2ds6y4g/November+18-Media+Release-Private+Prosecution+dismissed.pdf

The *Water Protection Act* affirms the province's ownership of the ground water resource and restricts the bulk export of ground water. Section 3 of the *Water Protection Act* states:

Water vested in the government

> **3** (1) The property in and the right to the use and flow of all the water at any time in a stream in British Columbia are for all purposes vested in the government, except only in so far as private rights have been established under this Act or under licences issued or approvals given under the *Water Act* or a former *Water Act*.
>
> (2) The property in and the right to the use, percolation and any flow of ground water, wherever ground water is found in British Columbia, are for all purposes vested in the government and are conclusively deemed to have always been vested in the government.

British Columbia also has a statutory foundation for future regulation of groundwater. The *Water Act* contains a definition for groundwater **(**"'ground water' means water below the surface of the ground"). The *Water Act* clarifies that it does not currently apply to groundwater, but may in the future. Section 1.1 states:

Application of Act to ground water

> **1.1** (1) Subject to a regulation under subsection (2), Part 2 *[Licensing, Diversion and Use of Water and Related Matters]* and Part 3 *[Water Users' Communities]* of this Act do not apply to ground water.
>
> (2) The Lieutenant Governor in Council may, by regulation, fix a day on and from which some or all of Parts 2 and 3 of this Act apply to ground water in British Columbia or in an area of British Columbia the Lieutenant Governor in Council designates in the regulation.
>
> (3) A regulation under subsection (2) may
>
> > (a) describe the area that it designates by any delineation of the area that adequately describes it including, for example, name, map, plan, legal description, reference to a stream, reference to an aquifer or other geological formation or part of one, depth or other dimension, or by any combination of methods, and
> >
> > (b) modify or add to any provision of the Act or regulations as the Lieutenant Governor in Council considers necessary or advisable for the purpose of making some or all of Parts 2 and 3 effectively applicable to ground water.

The Government of British Columbia has also made a number of announcements suggesting further regulation of groundwater. Specifically, a "phase 2" and "phase 3" of the *Groundwater Protection Regulation* have been identified. Phase 2 will focus on well report requirements and phase 3 will focus on implementing water management plans in designated areas and other protection for aquifers.[10]

Also Part 4 of the *Water Act* allows for the creation of water management plans, which may apply to groundwater. Section 63(4) states that "terms of reference …for a proposed water management plan,…may include considerations relating to …ground water and surface water runoff not in a stream." Water Management Plans themselves may restrict well drilling,[11] but as noted above only one of these plans is under development and none have been completed.

Provincial jurisdiction over groundwater is not without limits though. Two such limitations – federal government jurisdiction and aboriginal water rights – are now discussed.

Federal Government Jurisdiction

Federal government jurisdiction over groundwater is comparatively limited. The federal government would be directly involved in groundwater management on federal lands and native reserves. The federal government also has a number of enumerated powers under the *Constitution Act of 1867* that could conceivably create a role for the federal government in groundwater matters. These include powers in relation to:

- sea coast and inland fisheries;
- navigation and shipping;
- federal works and undertakings; and
- canals, harbours, rivers and lake improvements.

The exploitation of groundwater straddling provincial, territorial or international borders could give rise to federal jurisdiction. The federal government power in relation to international or interprovincial "works and undertakings" has been interpreted to cover pipelines.

The federal government also possesses two broad powers in relation to criminal law and peace order and good government that might support federal action that impacts groundwater.

[10] Brown, B. and Wei, M., Water Stewardship Division (British Columbia Ministry of the Environment); posted on www.waterbucket.ca, January 2006.
[11] *Water Act*, s. 66.

Aboriginal Rights to Groundwater

Both surface and groundwater are the subjects of aboriginal rights claims. Establishment of rights may come through the settlement of treaties, land claims or through judicial challenge. An aboriginal right to water could conceivably be embedded in another right, such as the "right to fish" or traditional use of a water body.

This is an unsettled, rapidly developing area of law and the rights themselves will be site-specific, making it nearly impossible to offer any meaningful, general observations. However, it is clear that both provincial and federal actions impacting groundwater may run afoul of aboriginal water rights or claims.

IV. Regulation of Surface Water Rights in British Columbia and Potential Implications for Groundwater Usage

Some aspects of surface water usage are regulated in British Columbia under the *Water Act*. As the *Water Act* asserts jurisdiction over groundwater (although it is not yet the subject of specific regulatory provisions), the *Act's* current regulation of surface water rights provide one potential model of regulation.

General Outlines of British Columbia's Surface Water Licensing System

The most defining characteristic of British Columbia's water surface water licensing system is the codification of the prior allocation system, frequently described as "first in time, first in right".

Water licences delineate or restrict water use along a number of variables: the permissible quantity and timing of water use; the place of use; the purpose of use; the duration of the licence; and the licence's priority date.

The quantity of water that may be used under a licence is usually expressed as a volume over a specified period of time, ranging from second to annum.

The purposes of water use are defined in the *Water Act* and include conservation, domestic, industrial, irrigation, land improvement, mineral trading, mining, power, river improvement, storage and waterworks.[12]

Newer licences issued under the *Water Act* are time limited, however, strong rights of renewal are recognized under the *Act* and the original issuance date remains constant when licences are renewed. Most older licences contained no expiry date and are referred to as being issued "in perpetuity".

The priority date assigned to a licence is a critical feature. British Columbia's water licencing system has codified "prior allocation" principles, sometimes described as "first in time, first in

[12] *Water Act*, s. 1.

right". Under this approach, in times of water scarcity the most senior licence (the licence with the earliest priority date) is entitled to extract its full allocation, prior to a more junior licence.

Although BC's *Water Act* ranks the priority of classes of use, this ranking would only become operable in the rare case that two water licences have the same priority date.

Water rental fees are charges for water used under a licence in British Columbia. Generally speaking, water use is not metered, and a licence holder simply estimates the quantity used during the past year and submits payment for the actual water used (not the licensed amount) during the year. Water rental fees vary according to the purpose of water use.

Rights obtained under licenses are appurtenant to land and pass automatically when an interest in land is transferred. Rights may be transferred to another user, in another place for another purpose, subject to regulatory approval.

Another relevant feature of British Columbia's surface water licencing systems is the "use it or lose it principle". Under s. 23, rights to surface water may be forfeited for nonuse. This is positive in that it provides a mechanism for phasing out water right thereby permitting reallocation of that water for other uses. However, this characteristic can also operate as a disincentive to conservation by promoting water use when not needed, just to maintain the legal right.

Under the *Water Act*, use of surface water for any purpose other than certain time limited or emergency withdrawals or small domestic use requires a water licence.[13]

Environmental Gaps in the Water Licensing Scheme

Generally, the water licensing system does not undertake a rigorous assessment of the impact of a proposed water extraction. Unless a water source has been classified as water short or potentially water short, water licences are simply granted without formal assessment of the capacity of the water source to support the water use. Surface water uses that are part of proposed projects that trigger the *Environmental Assessment Act* may receive more rigorous scrutiny (discussed above).

Another deficiency is that the surface water licensing scheme lacks a proactive system to determine fisheries needs prior to licencing decisions, such as determinations of instream flow needs prior to applications being received. Some applications may be referred to other government departments which may lead to a further assessment of fisheries concerns.

Unlike most modern environmental statutes, the surface water licensing system does not provide public information rights or opportunities for further participation. Specifically, there are no public rights to be notified of water licence applications or to object to applications or appeal water licensing decisions. These rights are limited to riparian owners and others who hold water licences for the same water source.

[13] *Water Act* s. 8 and 42 (RSBC, [RSBC 1996] CHAPTER 483)

Water use efficiency is not evaluated or made the subject of conditions in water licences.

Potential Application of Surface Water Licensing System to Groundwater

In summary, British Columbia's surface water licensing system provides rules for obtaining the rights to use water and sets out a priority for users that would apply to resolve conflicts arising from inadequate water availability. The system does not function to prevent harm to fish or the environment generally. It also provides no mechanisms for promoting the sustainable or efficient use of water. Thus, the extension of the current licensing system to groundwater – without modification -- is not desirable.

V. Regulatory Options for Groundwater Management in British Columbia

Water is essential to a wide range of human and non-human needs: drinking water, sanitation, power generation, food production, industry, supporting fish populations, nourishing ecosystems and serving spiritual and aesthetic values. Water is not only impacted by direct consumptive use, but also by land use activities and modifications that influence both water quality and quantity.

Limiting consideration to groundwater extraction and impact, there are many regulatory options that British Columbia could embrace. A more rigorous approach would be to require permitting for all planned groundwater development above a certain threshold (which may vary from region to region). Specific requirements of when permitting requirements apply and what factors are considered in permitting decisions vary from province to province (and territory), but regulatory options include:

- requiring a licence for wells with an extraction capacity above a defined level and/or for wells for specific purposes (e.g., water bottling);

- requirements for hydrologic, environmental or other assessments to be prepared by the licence applicant;

- specification of objectives that must be maintained if licences are to be issued (such as ongoing preservation of quantity and quality targets);

- imposition of conditions to protect the environment or existing uses in licences issued;

- set backs from existing wells;

- prohibitions or restrictions on issuing licences likely to result in significant impacts on the environment or existing water uses;

- providing affected persons and the public with notice of an application and the opportunity to make submission to decision makers and to appeal licence decisions.

Specific examples of these provisions are cited below.

Consideration of water reforms should not be limited only to groundwater. Given increasing demands for consumptive water use and a growing array of threats to water quality, governments need to embrace a comprehensive regulatory approach that integrates the political, economic, administrative, social processes and institutions by which public authorities, communities and the private sector take decisions on how best to develop and manage water resources. The ultimate goal of water governance reform is to ensure the sustainable use of water.

The complexity, uncertainty and increasing vulnerability of both natural and human systems has led to widespread support integrated water resources management (IWRM). IWRM has been described as a process that promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. This approach emphasizes managing water allocations within the ecological limits of availability, with a premium on three main aspects: equity, efficiency and environmental sustainability.

British Columbia's regulatory approach, however, allows consumptive groundwater extraction to the detriment of water's other essential roles. Given that there are many jurisdictions in North America have significantly more advanced groundwater regulation, there are many experiences and models from which British Columbia could draw in formulating legislative proposals. This assessment canvasses development from other regions that may assist British Columbia in:

- avoiding or minimizing impacts on the environment;

- protecting groundwater quality;

- minimizing the conflicts and harm resulting from groundwater usage;

- encouraging the sustainable and efficient use of groundwater;

- achieving integrated water resources management.

European Union:

In 2000, the European Parliament and Council of the European Union adopted the "Water Framework Directive" (WFD).[14] The WFD is often lauded for its adoption of the river basin as the management unit (as opposed to political or other administrative boundaries for management units).

The WFD sets an objective the coordination of efforts to protect the qualitative and quantative aspects of both surface and ground water, which moves toward integrated watershed

[14] Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy (23 Oct. 2000) Official Journal of the European Community 22.12.2000 L327/1.

management. The new Water Framework Directive will create watershed management organizations for all of Europe's rivers, half of which cross national boundaries. Rigorous water quality standards strictly limit emissions of harmful substances, which are in turn linked to environmental quality standards.

These standards are integrated within an overarching water quality management strategy that integrates multiple uses (such as water supply and industrial use) and multiple types of water supply (both ground and surface waters). Public participation in the newly created watershed organizations is legally required.

The European Commission adopted a proposal for a new Directive to protect groundwater from pollution on September 2003. Based on an EU-wide approach, the proposed Directive introduces, for the first time, quality objectives, obliging Member States to monitor and assess groundwater quality on the basis of common criteria and to identify and reverse trends in groundwater pollution. The proposal is intended to ensure an obligation under the Water Framework Directive, which aims to ensure good status of all waters in the EU.

Canada: (Information appearing in this section was obtained from the report *Buried Treasure* authored by Linda Nowlan and published by the Gordon Foundation. Complete report available at: www.buriedtreasurecanada.ca.)

Ontario recently revised its regulatory oversights of "permits to take water". When permit applications are filed, a number of considerations must be engaged, including: protection of the natural functions of the ecosystem; water availability; water use (including the impact or potential impact of the water on water balance and sustainable aquifer yield); and other issues including the interests of anyone else who has an interest in the water taking. The sustainability of the watershed and the intended use of the water are also considered in Ontario. The source protection requirements in the new *Clean Water Act* will also affect groundwater protection in Ontario.

Under the *Water Quality Regulation* of the *Clean Environment Act*, all waterworks in **New Brunswick** using more than 50 cubic metres of water daily require a permit to operate except in the case of a domestic well not connected to a distribution system. These groundwater sources must conduct a Water Supply Source Assessment, according to guidelines published to assist both the public and private sectors in the construction or modification of municipal and other large-scale water supply sources. The primary objective of these guidelines is to promote the proper testing and construction of water supply sources so that they will give a long-term yield of adequate quality water. In doing this, information on groundwater will be collected, and the impacts on existing water sources assessed.

In **Alberta**, the minister holds the right to deny licences not deemed in the "public interest." Also, regulators *must* consider whatever restrictions or guidance an approved water management plan provides, and *may* consider any existing, potential, or cumulative effects on the aquatic environment; hydraulic, hydrological, and hydrogeological effects; and effects on household users, other licensees, and traditional agriculture users that may result from the diversion of

water. Regulators may also consider effects on public safety, the suitability of the land for irrigated agriculture, and any other relevant matters such as any applicable water guideline, water conservation objective, and water management plan.

Nova Scotia's criteria are found in the *Guide to Groundwater Withdrawal Approvals*, and include the submission of a hydrogeological study that clearly evaluates the potential effects of the proposed withdrawal on existing groundwater users and the environment.

In **Manitoba**, applicants must provide project-specific technical reports prepared by licensed hydrogeologists. In **Prince Edward Island** the Drinking Water Management Section looks at the relevant watershed as a whole in making licensing decisions. The maximum used in practice is 50% of the available recharge for the area subject to the application. The total proportion of the recharge is assessed for the purposes of evaluating each application. This maximum is currently being reviewed. With the exception of a few heavily developed watersheds, water use does not come close to the 50% limit.

Newfoundland and Labrador's law entitles the minister to determine the rate at which groundwater is to be withdrawn from a well in order to minimize the risk of lowering the water table, and maintain a balance between recharge and discharge rates of an aquifer (among other things).